



DEPARTMENT OF THE ARMY  
UNITED STATES ARMY AVIATION AND MISSILE COMMAND  
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO  
ATTENTION OF

AMSAM-RD-AE-I-D-U

23 Oct 02

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with SEI Industries Bambi Water Buckets (AWR 1054)

1. References:

- a. Technical Manual 1-1520-237-10, Operator's Manual for Army Models UH-60A, UH-60L and EH-60A Helicopters, with all changes, 31 Oct 96.
- b. Operator's Manual, Bambi Bucket, Apr 99, S.E.I. Industries.
- c. Memorandum, Headquarters, 17th Aviation Brigade, KAAV-STD, 22 Feb 92, subject: Airworthiness Release for CH-47D and UH-60 Aircraft Utilizing SEI Industries Bambi Bucket.
- d. DATAFAX, UH-60 Section, CW2 Kunkle, HHC 1-4 Attack Battalion, 18 Mar 92.
- e. Memorandum, Office of the Adjutant General, CAAO, 12 Jun 92, subject: Airworthiness Release for UH-60 Helicopters with Bambi Bucket Installed.
- f. DATAFAX, 4 Sep 96, Operation and Maintenance Instructions for the Sacksafoam Foam Dispensing System.
- g. Operator's Manual, Sacksafoam II & Sacksafoam III, Jul 98, S.E.I. Industries, LTD.
- h. Memorandum, Stetson Troop, 4th Squadron, 3d Armored Cavalry Regiment, AFVF-H-R-S, 11 Feb 97, subject: Bambi Bucket.
- i. Memorandum, HQ, USAATCOM, AMSAT-R-X, 17 Mar 97, subject: Proposed Revision 3 for Bambi Bucket Installation on UH-60A/L Aircraft.
- j. US Army Aviation Technical Test Center, Qualitative Electromagnetic Compatibility (EMC) Checklist, JUH-60 Aircraft, (Enclosure 1).

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

k. Memorandum, Headquarters, 4<sup>th</sup> Brigade, 4<sup>th</sup> Infantry Division (Mechanized), AFZC-AV-CO, 7 Jul 00, subject: Request for Airworthiness Release (AWR) for Bambi Bucket Fire Fighting Enhancement System.

l. Memorandum, US Army Aviation and Missile Command, AMSAM-AR-E-I-C-U, 18 Apr 95, with Revision 5, 11 Jun 99, subject: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Bucket (AWR 570).

m. Product Bulletin, SEI Industries, Ltd., 9 Jul 98, subject: Operators Sacksafoam II and III (Models SFF2-5598 and SFF3-6598) Manufactured Before July 1998, (Enclosure 2).

n. E-mail, Washington Army National Guard, Jeffery Burkhardt, 2 Aug 00, subject: AWR Request.

o. Installation Instructions for Marine Recovery Device, (Enclosure 3).

p. Operator's Manual, Bambi Bucket with the Torrentula Valve, Sep 99, SEI Industries, LTD.

q. E-mail, NEARNG, 1SG Troy D. Johnson, 6 Jul 00, subject: Wiring and Power Source for Bambi Bucket with Torrentula Valve Used on UH-60A.

r. Memorandum, Nebraska Army National Guard, NEARNG-DAVN, 22 Aug 00, subject: Request for Airworthiness Release (AWR) for UH-60A (MEDEVAC) Aircraft to Utilize SEI Bambi Bucket (HD-6578) and Sacksafoam III Systems.

s. Product Bulletin, SEI Industries, Ltd., 16 Mar 99, subject: All Bambi Bucket Models; Control Head linkage Stop Bolt, (Enclosure 4).

t. Product Bulletin, SEI Industries, Ltd., 14 Mar 00, subject: All Bambi Bucket Models; Tripline Bullet Enlargement, (Enclosure 5).

u. DATAFAX, Michigan Army National Guard, Randy Bebee, 14 Aug 01, subject: Request for Revision of AWR 920 R-2, Dated 8 Jun 01.

v. Memorandum, SEI Industries International, (Mr. Richard Hinds), 15 Aug 01, subject: Approval Letter.

w. Memorandum, Military Department of Arkansas, DCSAVN-AMO, 25 Sep 02, subject: Request for Revision to Bambi Bucket AWR 920.

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

2. This memorandum constitutes an AWR in accordance with (IAW) Army Regulation (AR) 70-62 for all UH-60A/L Helicopters equipped with S.E.I. Industries Bambi Water Buckets, to include buckets with the Torrentula Valve. Optional installation and operation of Sacksafoam I, II and III, Fire Fighting Enhancement System, Bambi Bucket Marine Recovery Device, and 30-ft or 80-ft long lines are also authorized. The Bambi Water Buckets not equipped with the Torrentula Valve may use either an electronic or manual deployment release IAW this AWR. Additionally, this AWR supersedes AWR 920 and all revisions (R5 dated 16 Aug 02).

3. Configuration:

a. The basic UH-60A/L helicopter is defined in reference 1a with exceptions as noted within this Airworthiness Release.

CAUTION

Any deviation from the installation and operation instructions as stated is not authorized. Deviation from installation and operation instructions shall void this AWR.

b. The Bambi Bucket shall be installed IAW references 1b through 1d, and 1p through 1u. UH-60L aircraft shall utilize references 1e, and 1p through 1t. For either installation used, one of the following conditions shall apply:

(1) The breakaway connector shall be a standard household plug type and be lightly taped with two wraps of nylon tape. The breakaway resistant force of the nylon tape shall be measured and shall not be more than ten pounds. The plug shall be rated at a minimum of 15 amperes.

(2) The breakaway connector assembly shall consist of an MS-3101A24-11S plug and an MS3107A24-11P quick disconnect with MS3057-16A backshell cable clamps. The MS3057-16A backshell cable clamps shall be shimmed to accommodate small gage wire by using a four-inch section of 3/8 inch inside diameter (ID) neoprene hose and a two-inch section of 5/8 inch ID neoprene hose to accomplish a tight fit.

c. The following items are optional equipment and may be used at the discretion of the local command.

(1) The Sacksafoam (I) foam-dispensing system shall be installed and operated IAW reference 1f.

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

NOTE

The Sacksafoam (I) foam-dispensing unit shall not be used with Torrentula Valve-equipped Bambi Buckets.

(2) Sacksafoam II and Sacksafoam III systems shall be installed and operated IAW references 1g and 1m.

(3) Sacksafoam II and III shall be secured to the aircraft floor with two cargo straps forward and aft, two cargo straps laterally, and IAW Paragraph 6.20.3 of reference 1a.

CAUTION

Sacksafoam II and III (Models SFF2-5598 and SFF3-6598) manufactured before July 1998 will suffer failure when the polarity of the power supply is accidentally reversed. Correct polarity is critical to both the Sacksafoam power and Bambi dump power circuits. If reverse polarity in the Sacksafoam circuit has occurred, several components in the system may need replacement: (1) the 10 amp fuse, (2) the dip tube switch, (3) the fill pump relay, (4) the diode across the fill pump relay primary coil. If the fuse has blown, it is indicating that a short has occurred in the Sacksafoam circuit, and that above items 2, 3 and 4 must be tested and replaced as necessary. If the polarity of the Bambi dump power is reversed, the Sacksafoam controller will malfunction when the dump switch is depressed.

(4) The Suppression Agent Injection System (SAIS) shall be installed and operated IAW reference 1k.

(5) The Marine Recovery Device for Bambi Buckets shall be installed IAW reference 1o.

NOTE

Attachment of the breakaway cord shall be made at the cargo hook to airframe attachment location (shaft).

d. Substitution of a manual water door release cable is authorized in place of the electrical solenoid IAW reference 1h, subject to the following restrictions as requested in reference 1i.

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

(1) The cable shall be attached to the bucket release arm by suitable means to prevent its release through normal use and jettison. Safety wire shall not be used to attach the cable to the bucket.

(2) The aircraft end of the release cable shall be attached in the hook well vicinity with a suitable breakaway method, not exceeding ten pounds tension. The cable and breakaway attachment shall be routed and attached in a manner that minimizes the potential for entanglement with hook well components during jettison.

(3) Bambi Buckets equipped with the Torrentula Valve may not be operated by manual water door release cable, as stated above.

#### NOTE

The following power source configuration is applicable only to UH-60 helicopters with the rescue hoist modification kit installed as referenced in 1q.

e. UH-60 aircraft fitted with the rescue hoist modification kit provide a 28 volt DC power source capable of supplying power to operate the Torrentula valve Bambi Bucket and the optional Sacksafoam II or III with the hoist control master switch placed in the on position. J227 in the right aft cargo compartment provides power to the internally mounted rescue hoist. Pin A of J227 carries 28 V DC and 130 DC amps for operation of the rescue hoist. The Bambi Bucket and Sacksafoam II or III require a combined total of up to 41 amps DC available for normal operation.

f. Hoist connector P227 is required to correctly connect the Bambi Bucket junction box to the rescue hoist wiring. P227 connector plug pins used for the Bambi Bucket installation are correctly sized to accommodate the 10 AWG wire that is supplied with the Bambi Bucket. A short pigtail is also attached to pin A of P227 using 14 AWG wire for power for the Sacksafoam II or III.

g. The new wires for the subject equipment shall be routed and clamped in such a manner that assures protection from physical abuse, i.e., being stepped on, door slammed on, or hung from as a handhold and will not cause tripping or other hazards to crew or maintenance personnel. Particular attention shall be given to adequate bonding of neutral wires. The wires shall be adequately protected from vibration, chafing, or stretching. Do not clamp wires to control tubes or cables, fuel lines, hydraulic lines, etc.

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

h. Installation of Torrentula Valve-equipped Bambi buckets on UH-60A aircraft without the Rescue Hoist Modification Kit shall be as follows:

(1) Connector J265, in the left aft cargo compartment, provides power for a command console. Pin B of J265 carries 28 V DC and 25 amps.

(2) Connector J265 pins used for the Bambi Bucket installation are correctly sized to accommodate the 10 AWG wire that is supplied with the Bambi Bucket.

(3) Due to power requirements, the Torrentula Valve-equipped Bambi Bucket and the Sacksafoam III may not be simultaneously operated in this configuration.

i. The 30-ft and 80-ft Bridon American Dyform 18 rotation-resistant steel ropes are the only extended long lines authorized by this AWR. No other extended lines are authorized.

#### 4. Operations and Restrictions:

a. The flight envelopes, operating instructions, and limitations for the UH-60 helicopter shall be IAW reference 1a and this document. If there is a conflict between reference 1a and this AWR, this AWR shall prevail.

b. During Bambi Bucket operations, the aircraft is restricted to daytime Visual Flight Rules (VFR)/Visual Meteorological Conditions (VMC).

c. A current DD Form 365-4 (Weight and Balance Clearance Form F) that reflects the subject installation must be executed and be on file per AR 95-1.

#### CAUTION

Weight limitations shall be strictly observed. This AWR is not intended as authorization to exceed the aircraft weight limitations stipulated in reference 1a. Depending on aircraft configuration, cargo, and/or personnel on board, weight limitations may prohibit full load capacity carried in the Bambi Bucket.

d. Airspeed shall not exceed 95 knots with the Bambi Bucket empty, and shall not exceed 50 knots during dumping operations.

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

e. Water replenishment will be conducted from a stabilized hover. The bucket will be lowered vertically into the water and, once filled, withdrawn from the water vertically. Forward movement will not be attempted until the bucket is clear of the surface of the water.

#### NOTE

Sacksafoam II and III are not necessarily cross compatible with the same Bambi Buckets as the original Sacksafoam (I) system.

#### CAUTION

Rapid lateral cyclic inputs shall be avoided with the Bambi Bucket full with a 30-ft or 80-ft long line. The resulting lateral load oscillation could result in aircraft damage.

#### NOTE

Excessive hovering with an empty Bambi Bucket will cause the bucket and suspension lines to twist, and will lead to increased bucket filling times.

f. Airspeed shall not exceed 75 KIAS with the Bambi Bucket empty with a 30-ft long line.

g. Airspeed shall not exceed 80 KIAS with the Bambi Bucket empty with a 80-ft long line.

h. This AWR shall be considered temporary in order to serve the priority needs of typical fire fighting missions. This AWR is not intended to cancel other existing AWRs on the aircraft for other nonstandard equipment, unless such equipment interferes with the installation of the Bambi equipment. Due to the priority of Bambi Bucket missions, it may be necessary to remove interfering nonstandard equipment. Subject equipment shall be removed upon mission completion.

#### 5. Special Inspections and Instructions:

a. In addition to normal inspections, a qualitative Electromagnetic Compatibility (EMC) test shall be conducted on each aircraft IAW reference 1j, prior to first flight with this equipment installed. This test shall demonstrate that the newly installed equipment, including any test instrumentation, does not serve as sources or victims of electronic subsystems. This shall be accomplished by monitoring the performance of all new and existing subsystems as individual subsystems operated in-turn. Operation of this equipment includes a power-on/power-off cycle,

SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

initializing or warm-up (if applicable), and all modes of operation. All equipment shall be in the "in flight" configuration and shall be operated using aircraft generated power. The flight test portion of the EMC test shall be conducted under day Visual Flight Rules (VFR) conditions. Any EMC anomalies shall be reported by telephone immediately to this headquarters, US Army Aviation and Missile Command (USAAMCOM), AMSAM-RD-AE-I-D-U, Mr. Gary Trotter, DSN 897-2350-9693 or commercial (256) 705-9693, prior to next flight. In addition, a letter report shall be submitted stating that the EMC test was conducted, referencing this AWR and stating the problems encountered during the EMI/EMC test to this headquarters, (USAAMCOM), AMSAM-RD-AE-I-D-U, Mr. Gary Trotter, not more than 10 days after the test.

b. A 10 hour/14 day visual inspection shall be made of the subject installation to ensure that no progressive structural deterioration is occurring, that there is no loss of security, and that no damage to the host helicopter exists. Any occurrence of the preceding shall be corrected prior to further flight operations.

c. This Command has no responsibility for establishing or maintaining any logistics support for the nonstandard equipment or system installation. Any/all logistics support required for such equipment/system installation must be established and maintained by the operating unit with appropriate, locally established, support activities. Parts needed for this modification may not be available in the supply system. Your activity/facility must locally procure/manufacture the modification parts (plus any additional spare parts). This AWR is not authorization to procure any material or sources "Sole Source".

d. In the event any operating limit, or limits established by this AWR, is exceeded in addition to the normal entry on DA Form 2408-13, appropriate inspection plus special inspection for security and condition of modifications shall be performed prior to next flight. Any incident or malfunction of the aircraft suspected of being related to these configuration modifications shall be reported by telephone immediately to USAAMCOM, AMSAM-RD-AE-I-D-U, Mr. Gary Trotter, DSN 897-2350-9693 or commercial (256) 705-9693.

e. This helicopter shall be returned to standard configuration prior to transfer or turn-in to an overhaul facility.

f. The aircraft shall be inspected and maintained IAW all applicable Maintenance Manuals and Associated Maintenance Advisory and Safety of Flight Messages. Any discrepancies shall be evaluated/repared prior to the next flight to ensure continued airworthiness of the helicopter.



SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

g. For Army Materiel Status System (AMSS) or DA Form 1352 reporting purposes, application of this Airworthiness Release shall not cause the aircraft to be reported as Partially Mission Capable (PMC). Aircraft that are nonstandard configured and operating under this release may be reported as Fully Mission Capable (FMC).

h. Unit Commanders are responsible for training on operation of subject equipment and any aircraft-unique training required as a result of subject equipment installation.

6. Aircraft Logbook Entries:

a. In accordance with Department of the Army (DA) Pamphlet 738-751, the following entries shall be made on the DA Form 2408-13-1/2408-13-1-E and shall be perpetuated on each form during the period of installation or until superseded by another AWR, or until reason for limitation is removed.

(1) Place a circled red "X" in the Status block IAW DA Pamphlet 738-751. In the Faults/Remarks block, make the following entry: "Operate within limitations and restrictions specified in the enclosed Airworthiness Release dated 23 Oct 02."

(2) Place a red dash in the Status block to be followed in the Faults/Remarks block with "One-time EMC test required prior to first flight with the newly installed equipment IAW the enclosed Airworthiness Release dated 23 Oct 02."

(3) Place a red dash in the Status block to be followed in the Faults/Remarks block with the following entry: "Perform visual inspection required by the enclosed Airworthiness Release dated 23 Oct 02."

(4) The remaining blocks in the Fault Information block will be completed IAW DA Pamphlet 738-751.

b. An exact copy of this AWR describing the operating procedures, limitations, and restrictions will be inserted in the aircraft logbook and another copy inserted in the Aircraft Historical Record File.

c. The aircraft DA Form 2408-15/2408-15-E shall be annotated to reflect the successful completion of the EMC test and to cite this AWR by subject and date. The -15/-15-E shall be annotated to reflect temporary installations as well as permanent changes to configuration.

AMSAM-RD-AE-I-D-U

23 Oct 02


SUBJECT: Airworthiness Release (AWR) for UH-60A/L Helicopters Equipped with S.E.I. Industries Bambi Water Buckets (AWR 1054)

7. This AWR is terminated upon transfer of the helicopter, changes in configuration of the subject equipment, or upon issuance of a later AWR, whichever occurs first.

8. If the configuration of these helicopters is changed by the application of a Modification Work Order (MWO) subsequent to the installation of the equipment described in this AWR, the compatibility of the nonstandard AWR equipment with standard MWO equipment may result in either physical or electrical conflict. An MWO takes precedence over an AWR because the equipment becomes standard for fleet-wide use. When an approved MWO is applied to these aircraft during the existence of the AWR, additional testing and/or analysis may be required to support compatibility of standard and nonstandard equipment. If interference occurs, please contact AMSAM-RD-AE-I-D-U, Mr. Gary Trotter, DSN 897-2350-9693, commercial (256) 705-9693, or e-mail [gary.trotter@rdc.redstone.army.mil](mailto:gary.trotter@rdc.redstone.army.mil).

9. The point of contact for this AWR is Mr. Gary Trotter, AMSAM-RD-AE-I-D-U, DSN 897-2350-9693, or commercial (256) 705-9693.

5 Encls

  
DENNIS S. POWELSON  
Director of Aviation Engineering

#### DISTRIBUTION

US Army Pacific, (APLG-MMM), Fort Shafter, HI 96858-5100  
200<sup>th</sup> Materiel Management Center, (AERLA-MMC-ATMD), Unit 23203, APO AE 09263  
US Army Forces Command, (AFLG-FMMC-HT), 1777 Hardee Avenue SW, Fort  
McPherson, GA 30330-1062  
National Guard Bureau, (NGB-AVN-A, Calvin Dick), 111 South George Mason  
Drive, Arlington, VA 22204-1382  
US Army South, (SOOP-AV,), Fort Buchanan, Puerto Rico 00934  
Utility Helicopters Project Office, (SFAE-AV-UH), Redstone Arsenal, AL 35898-5280

IN THE YEAR 1784  
BY JAMES OSGOOD  
NEW YORK: J. B. LIPPINCOTT & CO.  
1884

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784

THE HISTORY OF THE NEW YORK  
IN THE YEAR 1784